**Smart Traffic Control System in VHDL on FPGA**

*Gorgonzola*

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# Team members

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# Introduction

# Concept description

We will work on the “Traffic Light Controller System” (TLC) in VHDL on FPGA. To begin with, specifying the environmental constraints so that we can work with one scenario is desirable. We limit our project to “4 ways of roads intersecting at a point” with TLC operating autonomously.

For this system, we have sensors as inputs that can detect the number of cars in a cue. For TLC, we need to have FSM (Finite State Machine) as the main processor, RAM for storing information, counters for cueing, down-counters for waiting time, and 7-segment-LED displays for the output.

In terms of methodology for the system, this is a rough sketch of what is going to happen. On one road just before the intersection, cars will stand by when the light is red. The number of cars will increase and when it reaches 10 in the cue, the waiting time for these cars will reduce by 2 seconds. If it reaches 15 or more, the waiting time will reduce by 5 seconds, for example, in order to enable smoother traffic control.

# Project/Team management

*Which project methods you used in your project?*

*Breakdown: How you managed your tasks?*

*What are the different tasks/roles of the team members in the project?*

*Describe which team member did which tasks.*

# Technologies

# *Describe the technological approaches you will use to implement your project.*

* *VHDL*
* *Eagle*
* *FPGA*
* *If necesseray other technologies*

# VHDL Implementation

*Describe the implementation of your digital design in VHDL/FPGA*

*Provide a detailed block diagram for this purpose and briefly explain the used modules.*

*Describe how you verified your solution. Testbench!!*

*Provide the results for your FPGA Implementation (Results summary + Hardware results if necessary)*

# PCB Design

*Describe the implementation of your schematic and PCB design*

*Give a summary about your PCB design results (BOM, Costs, Size usw.)*

# Sources/References

*Provide the sources on the technologies and algorithms you used in your project (Github).*